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ABSTRACT .

Though formal arrangements between community colleges and business and industry are increasing, structured workplace apprenticeship arrangements remain scant. Such arrangements have a number of advantages for students, colleges, and industry, including: (1) they represent a way in which colleges can gain private sector support for experiential learning programs; (2) students enrolling in apprenticeship programs practice technical skills while learning specific applications that benefit both industry and the learner; (3) in addition, students benefit by increased employment opportunities and the likelihood of rapid advancement within the firm; and (4) industry benefits through employees capable of beginning full-time employment with known, specific competencies which contribute to overall productivity. Community colleges have always attempted to provide courses that enable vocational education students to find jobs in current technologies. However, curriculum design and implementation processes often take so long that students end up trained in skill areas that are no longer current. Having students participate in a program with a practical, experiential, apprenticeship component permits training that is consistent with industry requirements. (KP)

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THE APPRENTICESHIP COMPONENT

A Vital Part of Work Force Training

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Introduction

Structured workplace apprenticeship arrangements, although an established practice through the ages, remain scant. Program development and formal arrangements are increasing due to support from industry leaders who see experiential learning opportunities as vital. Community colleges, institutions known for integrating experiential learning opportunities through explicit curriculum classes, agree with the value-added perspective of practical skill development that comes with a structured learning arrangement. Performing content-related tasks in meaningful situations external to the classroom captures an effective outcome of educational efforts.

This paper underscores the need to develop functional apprenticeship arrangements in concert with community college degree programs. Facts are provided to support the need for apprenticeship opportunities. It is intended to show that partnering with industry has direct learner benefits that not only results in employment opportunities but also in an enriched learning experience.

Setting the Stage

Preparing tomorrow's work force is an awesome responsibility. Over the years, community colleges became popular institutions for individuals wanting to obtain the latest technical skills. It is no different

today as many firms expect community colleges to help by preparing individuals to enter the workforce with technical competence. For many people, learning is enhanced by actually doing or simulating an authentic work situation. This approach, however, is the exception rather than a routine practice in technical training programs.

Typically, when experiential learning programs were originally created by community colleges, the creator assumed the responsibility for ongoing support through fiscal resources. Now we enter a phase where financial support is declining, and continued support of ancillary learning opportunities requires additional commitments. One way to cope in these times when budgets are shrinking and program needs are expanding is to solicit the support of the private sector. In today's economy, workforce training should assume a high priority. Responsiveness and quality have to be paramount, but moreover, traditional training for workforce preparation should contain more practical aspects that provide students with an experiential component.

Probably, the oldest form of training is apprenticeship (Rachman and Mescon, 1976). Berryman (1991) claimed that workplace apprenticeships represent a learning situation where the workplace is the locus of that situation. It enables a person to learn a skill by assisting an experienced worker for a designated period of time. Observing the many problems and deficiencies industry is experiencing, the addition of apprenticeship training has many advantages.

Only recently has any part of our formal schooling system paid attention to the real needs of the workforce (Warford, 1995). The good news is that agencies, including government, private sector participants and educational institutions are addressing each condition in a variety of

organized means that usually include a work-based learning component, which involve practical experiences and guided instruction by industry representatives on the firm's premises. Bragg, Hamm, and Trinkle (1995) define work-based learning as instructional programs that deliberately use the workplace as a site for student learning.

A brief review of the structural environment in which business operates will be helpful to understand why a fundamental change in training needs to take place at the community college. In arriving at a recommendation to include apprenticeship training opportunities in occupational and technical curricula, certain structural elements are reviewed, including future job requirements and the economic perspective of training.

Job Requirements in the Future

The jobs created during the next decade will be complex; workers will need higher skill levels and a better command of reading, writing, reasoning, and mathematics (Dole, 1989). The higher skill jobs are expected to account for 55 percent of total projected job growth between now and 2000 (Raizen, 1989); eighty percent of these jobs will require some kind of education beyond the high school level, but not at the baccalaureate level (Cetron and Davies, 1988). One could predict the level of workforce training will become even more important for community colleges as only 22 percent of the future jobs will require a four-year college education or advanced degree. Parnell (1990) suggested the workers of the future, at all levels, must develop higher levels of problem solving and reasoning abilities. The workers must also be computer

literate; they must be broadly educated with the ability to apply knowledge.

The Skills Employers Want

Employers are complaining about a gap between the skills they require and the skills job seekers possess. For example, two thirds of the employers reported that entry-level applicants lacked adequate basic skills. Carnevale, Gainer, and Meltzer (1988) reported that employers want employees who can learn the particular skills of an available job; they want employees who will hear the key points that make up a customer's concerns and who can convey an adequate response; and they want employees who can think on their feet and who can come up with innovative solutions when needed. They also want employees to have pride in themselves and who know how to get tasks completed. In addition, employers want employees who can get along with customers, suppliers, or co-workers; who can work with others to achieve a goal; who have some sense of the organization's direction and what they must do to make a contribution; and who can assume responsibility and motivate co-workers when necessary.

Current Industry-Sponsored Training

If firms do not get what they need from the schools, a simple approach is for them to conduct the training on their own. One becomes concerned when looking at the investment in training by corporations. The American Society for Training and Development (ASTD), as reported in The Wall Street Journal, estimated that 22 percent of the companies offer basic training in reading, 41 percent in writing and 31 percent in

arithmetic ("Remedial Training", 1990). Within the next three years, 93 percent of the largest U. S. companies will be teaching employees the three R's and other basic work skills, according to a survey by ASTD. In addition to basic skills, The Wall Street Journal reports that as jobs become more complex, workers need to learn skills previously required only of supervisors. Some 58 percent of the companies surveyed offer training in problem solving, 51 percent in teamwork, and 45 percent in oral communication ("C Stands For", 1990).

American companies budgeted more than \$44 billion for training expenses in 1989 (Wallace, 1990). For remedial training alone, ASTD estimated that United States companies spend about \$30 billion each year. This amount does not include wages paid while employees are participating in training. By the year 2000, America's training budgets are predicted to triple, and companies will need at least 250,000 more instructors (Cetron and Davies, 1989).

The Economic Perspective

Education is an essential element of the country's infrastructure. To achieve economic prosperity, it requires a healthy and well-functioning infrastructure. Two decades of infrastructure neglect are evident. Overall productivity in this country is lagging. For example, productivity growth fell from an average annual gain of 2.8 percent between 1958 and 1969 to a 1.4 percent annual gain from 1970 to 1986. In relative productivity among nations, the United States, who once dominated in output now ranks fourteenth (Hudson Institute, 1987).

Some other disturbing trends include rates of illiteracy. In the U. S., about 13 percent of 17-year-olds are illiterate compared to only one

percent of the same age group in Japan and Germany. A more widely reported rate is high school completers. In the U. S., 73 percent of the students complete high school, while in Germany and Japan the rate is 91 percent and 94 percent, respectfully.

Inadequate educational preparation is costly to the economy. As reported recently in Business Week, John Bishop, an economist at Cornell University, reviewed test scores of high school graduates. He concluded that graduates in the 1980s were more than one year behind their 1966 counterparts in academic ability. This decline in academic ability drastically affects the economy. He estimated that the cumulative shortfall cut the 1987 GNP figure by 1.9 percent, or \$86 billion. At the same rate, the shortfall in GNP between now and 2010 could be more than \$3 trillion (Farrell, Weber, & Schroeder, 1990).

Becoming Responsive

Recognized as the leader within higher education that devotes a large portion of its curriculum to occupational training in credit and credit-free learning environments, community colleges are involved as principal workforce education providers. Further development of the linkages community colleges have with business and industry is critical to the survival of public and private institutions. More importantly, however, the linkage must be made meaningful for both. Business should gain by an easier access to a rich cohort of teaching talent. Faculty members benefit from more exposure to corporate environments and to students familiar with the real operations and problems of the workplace (Wallace, 1990). To develop a meaningful response to the needs of business, the community college needs to consider adding an experiential learning or

apprenticeship training component to its occupational-technical curriculum. This will eliminate some of the deficiencies that are widely apparent.

The climate and present economic situation present an opportunity that is ripe for immediate action. At the national level, Dale Parnell published, preached, and practiced educational reform long before many other studies on the subject became available. Parnell's (1985) concept of tech/prep, 2+2 articulation contained many of the perspectives being discussed in the literature and in federal legislation. As a result, community colleges enter the scene poised to act on these issues of articulation and preparing a stronger work force for tomorrow's technological demands.

Labor is the single most important input of total factor productivity (NCOE/AACJC, 1990). Business firms have a stake in increasing productivity, so acquiring productive employees who can manage the technology represents a strategy that will result in more profits. Hence, they seem willing to do something about the way educators go about the process of educating their keys to a productive future. In unequivocal terms, the business firms make it very clear what they want. It's up to educators to commit to correcting deficiencies in the educational system.

Fortunately, community colleges are assured of a more academically prepared student coming out of the secondary environment due in part to initiatives such as Tech Prep and School-To-Work. Legislation calls for the formation of partnerships in serving special populations and developing connecting activities. This mandated partnership is something that is not new for many community colleges; however, it will give many a chance to renew their commitment to collaboration. Among the practical

challenges, apprenticeship linkages may match the needs of the firm with an available labor pool to form a flexible and responsive form of school-and-work-based training.

When one thinks of apprenticeships, the German model is often sighted. Nearly two-thirds of all Germans between the ages of 16 and 19, or 750,000 a year, enter apprenticeship programs after the tenth grade (Smith, 1995). Apprenticeships are so highly regarded that even university-bound Germans often spend a couple of years in apprenticeship programs to gain skills, self-confidence, and maturity. Many German firms now prefer up-and-coming managers to have both kinds of education" (Smith, 1995).

In the mid-nineties, Germany is in the midst of its worst recession since 1945. Despite this condition, all firms remain publicly committed to their worker-training programs. Through apprenticeships, German business executives know they reap immeasurable rewards, and they willingly invest about \$47,000 per apprentice for the duration of the multi-year program. On the other hand, American executives do not invest in training for fear that the trained workers will be lured away by competitor firms before they recoup their investment (Von Brachel, 1994).

Apprenticeship Training

The apprenticeship system in Germany demonstrates that a focused effort to improve the academic backgrounds and work-related skills of young people who enter the workforce without (four year) college degrees, can pay huge economic dividends (Broder, 1990). Due to the situation that training in a technological, associate degree curriculum must provide the breadth of general education and the depth of specific program

requirements, there is typically little room for advanced specialization. In constructing a collaborative plan with industry, the college should establish a portion of the program that permits learning of advanced technical applications in the work place through a formalized apprenticeship program.

Those companies that engage in apprenticeships today find both the workers and the company prosper as a result (Pennar, 1990). In the United States, the secondary schools may not be ready to begin a formalized apprentice system, but community colleges are after having formalized relationships with local industries. In an apprenticeship system, students learn academic subjects as well as specific work skills. Companies dedicate themselves to providing intensive and expensive training on the job, so employees can continuously upgrade their skills.

The portion of the coursework offered in the firm should be of an advanced nature, building upon all the previous levels of schooling and experience gained by the students. With the technical focus occurring after students complete a regular sequence of courses, the technology is more current and probably more advanced than that which is normally conducted in the classroom. Under normal conditions, students successfully completing the apprenticeship portion receive college credit. Following graduation, the student is able to obtain employment in the sponsor firm that provided apprenticeship training. This represents an added feature to the student and prospective employer, similar to the German system. The firm benefits by getting an employee capable of beginning full time employment with known, specific competencies, thus contributing to overall productivity. The student benefits by employment opportunities and the likelihood of rapid advancement within the firm.

Conclusion

The ills of the work place need to be addressed through a coordinated program that first stresses mastery of basic skills. Those critical of the college's attention to the needs of business may think it adds yet another dimension to the diverse operations proclaimed in our mission. Unlike many research universities that prefer not to involve themselves in work force training, community colleges welcome the chance to become involved.

Students enrolling in apprenticeship programs can specialize and practice technical skills while learning specific applications that benefit industry and the learner. There are also important social gains when students enter an environment where adults serve as mentors and role models. As a result, industry obtains an educated worker capable of thinking, learning on the job, and being able to perform specified technical skills.

The position of the community college has always been to design courses that will enable students to get jobs in the latest technologies. An apprenticeship plan assures students and area firms of a commitment to the future. Too often, the curriculum design and implementation process takes long; students end up trained in skill areas that are no longer present in the rapidly-changing environment of the real world. Having students participate in a program with a practical, experiential, apprenticeship component permits training to be consistent with the requirements of industry.

Workforce development programs are accepted today as a responsive means to the changing perspectives of modern work. They include all

types of programs that prepare persons in some sort of employment transition for reentry into the workforce by providing them with new or additional skill sets. They also include skill upgrades and other continuing education programs for the current workforce (Warford, 1995).

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